

CLAIMS

1. A transfer case for a vehicle having front and rear axles, the transfer case comprising:

first, second and third input clutches connected to first, second and third members of a planetary gear set, respectively;

5 first and second transfer chains connected to each other and operatively engageable between said planetary gear set and the front and rear axles, at least one of said transfer chains being connected with a member of said planetary gear set;

10 a four wheel drive clutch operative to selectively connect the front and rear axles; and

said four wheel drive clutch and first, second and third input clutches being selectively engageable to provide three speed ratios and four wheel drive.

2. The transfer case of claim 1, wherein said first, second and third members comprise a sun gear, carrier and ring gear, respectively.

3. The transfer case of claim 2, wherein said ring gear is connected to said first chain, and said sun gear is connected to said second chain.

4. The transfer case of claim 3, wherein said first chain has a 1:1 chain ratio, and said second chain has an underdrive ratio.

5. The transfer case of claim 4, wherein said four wheel drive clutch selectively connects said second chain to the front axle.

6. The transfer case of claim 1, wherein said first, second and third members comprise a ring gear, carrier and sun gear, respectively.

7. The transfer case of claim 6, wherein said ring gear is connected to said first chain, and said sun gear is connected to said second chain.

8. The transfer case of claim 7, wherein said first chain has an underdrive ratio, said second chain has a 1:1 ratio, and said four wheel drive clutch selectively connects said first and second chains with the front axle.

9. The transfer case of claim 8, wherein said sun gear is directly connectable with the rear axle.

10. The transfer case of claim 1, wherein said first, second and third clutches and said four wheel drive clutch are selectively engageable to provide rear wheel drive low, four wheel drive low, rear wheel drive mid, four wheel drive mid, rear wheel drive high and four wheel drive high ratios.

11. The transfer case of claim 2, wherein said ring gear is connected with the first chain, and said second chain is connectable with said sun gear and the rear axle through said four wheel drive clutch.

12. The transfer case of claim 11, wherein said first, second and third clutches and said four wheel drive clutch are selectively engageable to provide rear wheel drive low, four wheel drive low, all wheel drive mid, four wheel drive mid, front wheel drive high, and four wheel drive high ratios.

13. The transfer case of claim 6, wherein said ring gear is connected to said first chain, said sun gear is connectable with the rear axle, said first chain has an underdrive ratio, said second chain has a 1:1 ratio, and said four wheel drive clutch selectively connects said ring gear and said first chain with the rear axle.

14. A drive train for a vehicle, comprising:
front and rear axles; and a transfer case including:
first, second and third input clutches connected to first, second and third members of a planetary gear set, respectively;
first and second transfer chains connected to each other and operatively engageable between said planetary gear set and the front and rear axles, at least one of said transfer chains being connected with a member of said planetary gear set;
a four wheel drive clutch operative to selectively connect the front and rear axles; and
said four wheel drive clutch and first, second and third input clutches being selectively engageable to provide three speed ratios and four wheel drive.

15. The drive train of claim 1, wherein said front and rear axles have different axle ratios.

16. The drive train of claim 15, wherein said first, second and third members comprise a sun gear, carrier and ring gear, respectively; said ring gear is connected to said first chain, and said sun gear is connected to said second chain; said first chain has a 1:1 chain ratio, and said second chain has an underdrive ratio; and said four wheel drive clutch selectively connects said second chain to the front axle.

17. The drive train of claim 14, wherein said first, second and third members comprise a ring gear, carrier and sun gear, respectively; said ring gear is connected to said first chain, and said sun gear is connected to said second chain; said first chain has an underdrive ratio, said second chain
5 has a 1:1 ratio, and said four wheel drive clutch selectively connects said first and second chains with the front axle; and said sun gear is directly connectable with the rear axle.

18. The drive train of claim 14, wherein said first, second and third clutches and said four wheel drive clutch are selectively engageable to provide rear wheel drive low, four wheel drive low, rear wheel drive mid, four wheel drive mid, rear wheel drive high and four wheel drive high
5 ratios.

19. The drive train of claim 15, wherein said first, second and third members comprise a sun gear, carrier and ring gear, respectively; wherein said ring gear is connected with the first chain, and said second chain is connectable with said sun gear and the rear axle through said four
5 wheel drive clutch; and said first, second and third clutches and said four wheel drive clutch are selectively engageable to provide rear wheel drive low, four wheel drive low, all wheel drive mid, four wheel drive mid, front wheel drive high, and four wheel drive high ratios.

20. The drive train of claim 14, wherein said first, second and third members comprise a ring gear, carrier and sun gear, respectively; and said ring gear is connected to said first chain, said sun gear is connectable with the rear axle, said first chain has an underdrive ratio, said second chain
5 has a 1:1 ratio, and said four wheel drive clutch selectively connects said ring gear and said first chain with the rear axle.

21. A transfer case for a vehicle having front and rear axles, the transfer case comprising:

first, second and third input clutches connected to first, second and third members of a planetary gear set, respectively;

5 first and second transfer chains connected to each other and operatively engageable between said planetary gear set and the front and rear axles, at least one of said transfer chains being connected with a member of said planetary gear set;

a four wheel drive clutch operative to selectively connect the front
10 and rear axles; and

said four wheel drive clutch and first, second and third input clutches being selectively engageable to provide three speed ratios and four wheel drive;

wherein said first, second and third members comprise a sun
15 gear, carrier and ring gear, respectively; said ring gear is connected to said first chain, and said sun gear is connected to said second chain; and said first chain has a 1:1 chain ratio, and said second chain has an underdrive ratio.